

Summary of Mountain Plover Research Conducted on Vermejo Park Ranch, Northeastern New Mexico, 2008-2009

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Below I have summarized some very initial findings from research I am currently conducting in the grasslands of the Vermejo Park Ranch, Colfax County New Mexico. This ranch is privately owned by Ted Turner and covers >230,000 ha. None of this work has been published and it is all in very preliminary stages of analysis, but I hope that you can use at least some of the information as the Ranch appears to be a very good site for Mountain Plovers.

All of my current research is being conducted within the 27,000 ha bison pasture at the southeastern edge of the ranch. This pasture is dominated by shortgrass prairie but is bisected by several small creeks with associated riparian habitat (See Goguen et al. 2005 cited below and attached for additional information about the site from some previous work). Bison were reintroduced to this pasture in 1997. Efforts to increase prairie dog abundance and distribution began about the same time and coverage of the grasslands by prairie dog colonies have increased from about 200 ha in 1997 to >2700 ha in 2009 (largely in an effort to be able to reintroduce black-footed ferrets). During 2008 and 2009 I conducted two related studies to evaluate the value of prairie dog colonies primarily for birds. I have described these two projects below with some preliminary results related to Mountain Plovers.

GOGUEN, C.B., D.R. Curson, and N.E. Mathews. 2005. Behavioral ecology of the brown-headed cowbird in a bison-grazed landscape in New Mexico. Pages 71-83 in Management of cowbirds and their hosts: Balancing science, ethics, and mandates (C.P. Ortega, J.F. Chace, and B.D. Peer, eds.). **Ornithological Monographs**, no. 57.

Effects of prairie dogs on bird and mammal diversity:

Basic methods: During 2008 and 2009 I established 600 m transects on 12 prairie dog colonies, and 12 paired transects located within 1 km of each colony, but in open prairie without prairie dogs present. During both summers, I visited each transect three times to conduct morning surveys counting all birds and mammals detected by sight and sound within 100 m of these transects.

Initial results: Over both years, I have detected 29 bird species (23 on p. dog surveys, 24 on controls) and 7 mammal species (6 on p. dog surveys, 4 on controls). Mountain Plovers were significantly more abundant on prairie dog colonies (Mean = 0.68 detections per survey) than on controls (mean = 0.03 detections per survey; $P = 0.030$).

Characteristics of prairie dog colonies used by mountain plovers.

Basic methods: During 3 time intervals in summer 2009 (second half of May, first half of June, second half of June), I used walking surveys to completely search 44 different prairie dog colonies for evidence of breeding by mountain plovers and burrowing owls. These 44 colonies ranged in size from <1 to 483 ha. I also conducted basic habitat sampling to describe the habitat and vegetation characteristics of each colony. My objective is to use modeling techniques to determine if Mountain Plovers are selecting colonies with particular landscape or habitat characteristics (e.g., colony size or age, proximity to other colonies, vegetation height, bare ground coverage, etc...).

Initial results: Mountain plovers were widely distributed on prairie dog colonies in the Vermejo grasslands including some colonies that are very close to the pinyon-juniper edge; I detected at least 1 plover on 17 of the 44 colonies, and confirmed breeding (nest or young in close association with parent) on 13 of these. Most colonies on which plovers were detected appeared to contain multiple adults; I located > 1 nest or brood on several colonies, and my largest single morning count was of 7 different adult plovers on one of the larger colonies. Based on my observations, I would not be surprised if there were 40-50+ plovers breeding on the ranch in 2009 but I admit this is a very crude estimate. I have not performed any comprehensive analyses yet, but can report some basic statistics comparing means of occupied and unoccupied colonies for various habitat characteristics:

Variable	13 colonies with confirmed breeding	31 colonies without breeding evidence
Colony size (ha)	141 (Range 5-483)	27 (Range 1-162)
Grass cover (%)	8.9	8.6
Forb cover (%)	4.4	10.7
Bare ground (%)	72.9	66.3
Vegetation height (cm)	1.1	2.0
P. dog burrow density		
(mean #/0.04 ha)	2.5	2.6
Shrub density		
(mean #/0.04 ha)	0.2	0.5

Ultimately, I hope to use a modeling approach to determine which of these and other variables are most important in predicting plover presence, but I still need to collect more data.